

# Work Order ID 89954

September-13-12 8:51:19 AM

**\*89954\***

Page 1

Item ID: D2244-116 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Step Extrusion  
 Start Date: 9/12/12 Start Qty: 80.00 **\*80\*** Cust Item ID:  
 Required Date: 10/12/12 Req'd Qty: 80.00 **\*80\*** Customer:  
 Reference:

Approvals: Process Plan: MLJ Date: 12-09-13 Tooling: Date: Run Start **\*NR1\***  
 QC: Date: SPC (Y/N): Date: Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2244	Rev D1

100		0.00
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**\*100\***

Purchasing

Purchasing

PURCHASING

Memo

0.00

Issue P/O: 17907 a) Extrude as per Dwg D2244b) Material:  
 6061-T6 (QQ-A-200/8) c) Minimum yield tensile strength = 35 ksid)  
 Minimum ultimate tensile strength = 38 ksi e) Minimum elongation = 8% f)  
 Order at 116" longg) Caradon Indalex Tool # M

*[Signature]* 12-09-13

110	Receive & Inspect for Damage & Mat'l Certs	0.00
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**\*110\***

Packaging

Packaging

Memo

0.00

Ensure certification are attached

*[Signature]* 4/2/15 (80)

120	QC6- Inspect dimensions to drawing	0.00
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**\*120\***

QC

Quality Control

Memo

0.00

Check Pull test per Dwg D2244 for compliance page attached. Check hardness  
 with Webster tester

*[Stamp]* DAS 16 9-13 17/10/19

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>															
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>															
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data <input type="checkbox"/>									
Equip/Tooling <input type="checkbox"/>									
Operator <input type="checkbox"/>									
Material <input type="checkbox"/>									
Setup <input type="checkbox"/>									
Other <input type="checkbox"/>									
Process <input type="checkbox"/>									
Supplier <input type="checkbox"/>									
Training <input type="checkbox"/>									
Unapproved <input type="checkbox"/>									

**FAULT CATEGORY**

<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
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# Work Order ID 89954

\*89954\*

Page 2

September-13-12 8:51:19 AM

Item ID: D2244-116 Accept \*N900040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Step Extrusion  
 Start Date: 9/12/12 Start Qty: 80.00 \*80\* Cust Item ID:  
 Required Date: 10/12/12 Req'd Qty: 80.00 \*80\* Customer:  
 Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start \*NR1\*  
 QC: Date: SPC (Y/N): Date: Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* Packaging Packaging	Identify as per dwg & Stock Location: <u>WA</u>  Memo Pull 84 + 20 PG For QC spot inspection 9/17/12	0.00  0.00				80	0		12.10.16
140 *140* QC Quality Control	QC21- Final Inspection - Work Order Release  Memo	0.00  0.00							12/10/31

12-10-30

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Skid-tube <input type="checkbox"/></td> <td style="width: 25%;">Crosstube <input type="checkbox"/></td> <td style="width: 25%;">Water Jet <input type="checkbox"/></td> <td style="width: 25%;">Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>						Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
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# Picklist Print

September-13-12 8:51:19 AM

Page 1

Work Order ID: 89954

Parent Item: D2244-116

Parent Item Name: Step Extrusion

Start Date: 9/12/12

Required Date: 10/12/12

Start Qty: 80.00

Required Qty: 80.00

Comments: IPP: A 24.03.04 New Issue KJ

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2244-116P Step Extrusion		Purchased	No			110	Each	0.0000	1	80			

*Ref 10 (80)*

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

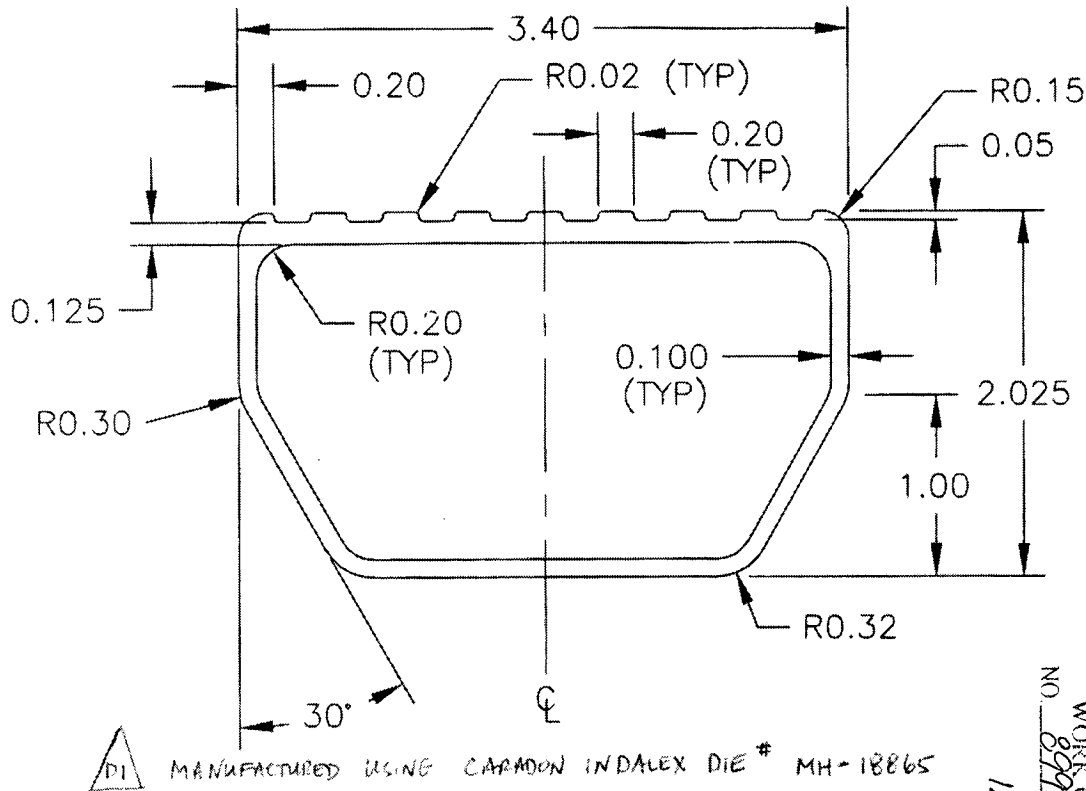
Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/>            Machining <input type="checkbox"/>            Thermoforming <input type="checkbox"/>            Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/>            Small Fab <input type="checkbox"/>            Finishing <input type="checkbox"/>            Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/>            Prod. Eng. Coord. <input type="checkbox"/>            Rec/Store/Packaging <input type="checkbox"/>            Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/>            Quality <input type="checkbox"/>            Other <input type="checkbox"/> </div> </div>					
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DESIGN BW	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>KE</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2244	REV. D SHEET 1 OF 1
DATE 98.11.18		TITLE STEP EXTRUSION	SCALE 1:1
A	94.07.05	NEW ISSUE	
B	94.07.11	REDESIGNED	
C	94.08.08	REDESIGNED	
D	98.11.18	REMOVED 6005A MATERIAL INCORPORATED DEO 90B1	
D1	01.04.17	ADDED DIE #	<i># 40</i>

RELEASED  
98.11.25 *KE*



MANUFACTURED USING CARADON INDALEX DIE # MH-18865

PART NUMBER D2244-XX.X  
XX.X IS CUT LENGTH IN INCHES

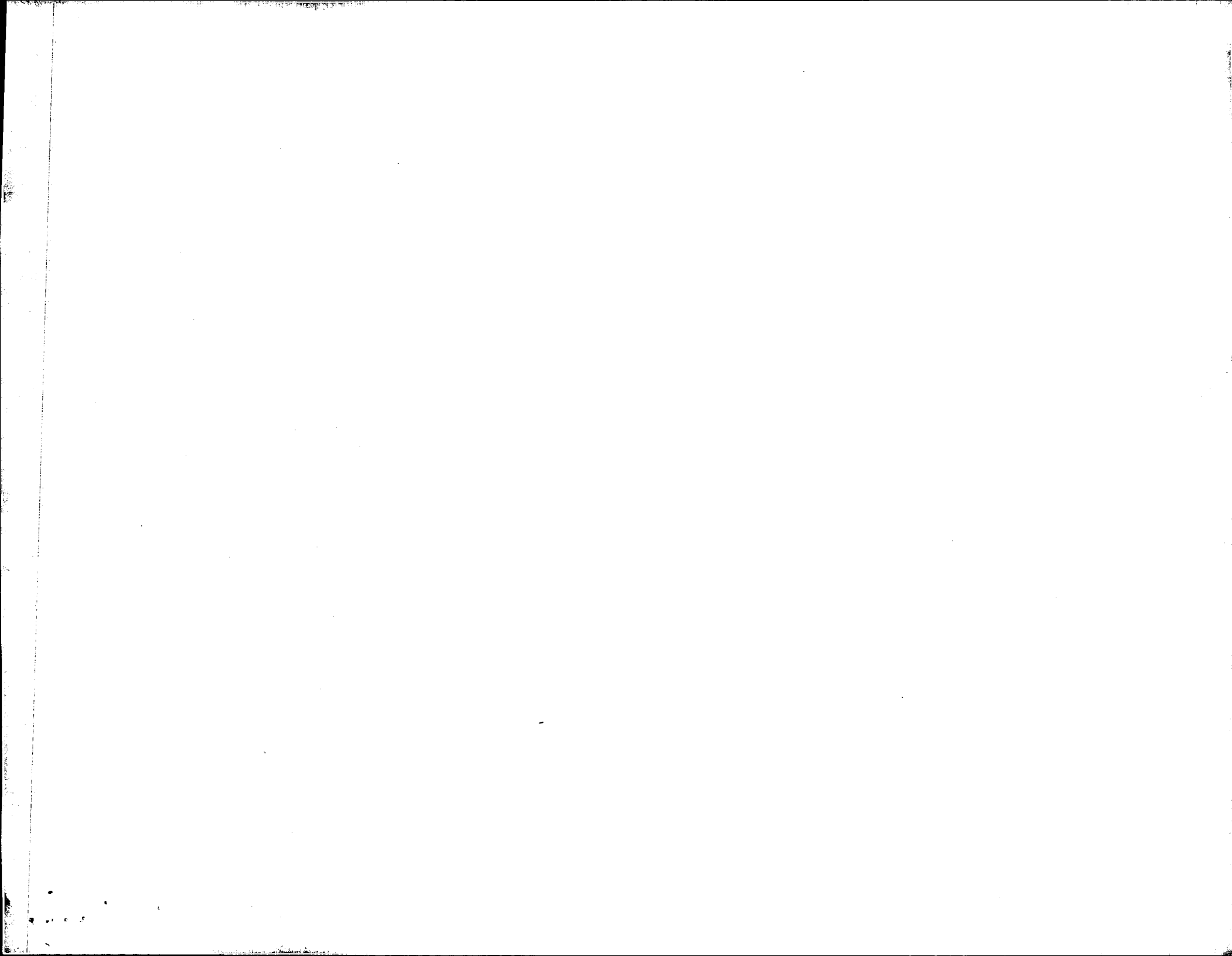
MATERIAL: 6061-T6 (QQ-A-200/8)

A SAMPLE FROM EACH BATCH WILL BE PULL TESTED TO ASTM STANDARD B221 BY AN APPROVED TESTING FACILITY TO ENSURE THAT THE BATCH MEETS THE MINIMUM MECHANICAL PROPERTIES STATED BELOW:

MINIMUM TENSILE YIELD STRENGTH = 35 ksi  
MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi  
MINIMUM ELONGATION = 8%

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED  
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED

SHOOT COPY  
RETURN TO:  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 89954 MCT  
12-09-13







Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO17907**

Purchase Order Date 9/13/2012

PO Print Date 9/13/2012

Page Number 1 of 1

**Order From :**

VC-SAP001

SAPA CANADA INC  
LOCKBOX B9427  
PO BOX 9100  
POSTAL STATION F  
TORONTO, ONTARIO M4Y 3A5  
CANADA

**Contact Name**

**Vendor Phone** 800 563 5120

**Vendor Fax** 800 563 8310

**Vendor Account Nbr** 201355

**Buyer**

Brigitte Golden

**Requisition Nbr**

**Tax Resale Nbr** 10127-2607

**Terms**

Net 30

**Currency**

CAD

**FOB**

Destination-Collect

**Ship To :**

DART AEROSPACE LTD 1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**FAKED**  
6/2/09/10

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	D2244-116P	Step Extrusion	10/12/2012 Yes	80.00 Each	Yours ppd	\$31.7030	\$2,536.24

**Special Inst:** EXTRUDE AS PER DWG D2244 REV. D1  
B89954  
MATERIAL: 6061-T6 AS PER QQ-A-200/8  
MINIMUM YIELD TENSILE STRENGTH  
= 35 KSI  
MINIMUM ULTIMATE STRENGTH = 38  
KSI  
MINIMUM ELONGATION = 8%  
SIZE: 116" LONG  
DIE TOOL # MH-18865

**PO Total:**

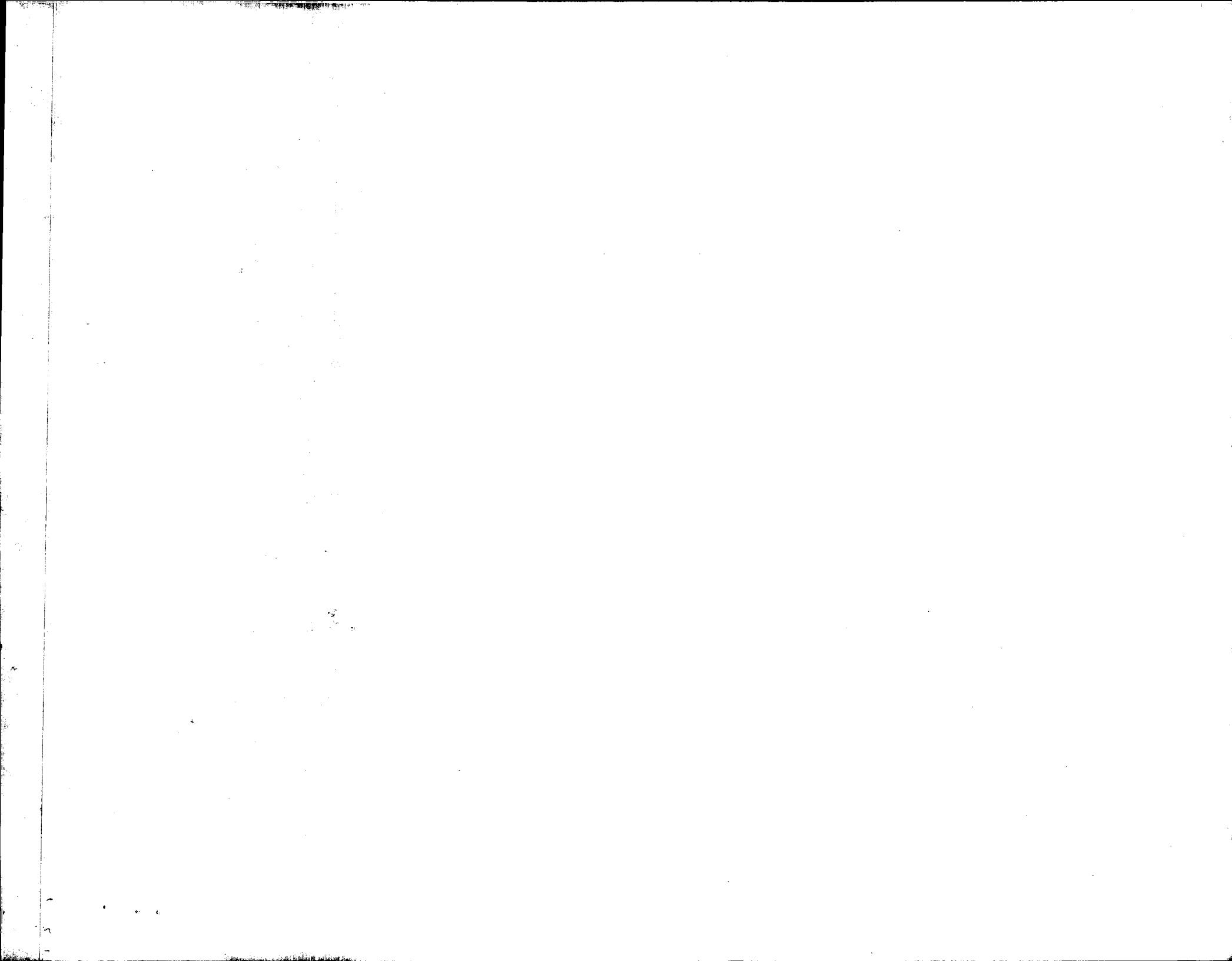
**\$2,536.24**

MATERIAL CERTIFICATION  
REQ'D UPON DELIVERY

**Change Nbr:** 1

**Change Date:** 9/13/2012

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required - YES NO



**- PROFILÉS D'ALUMINIUM - ANODISATION - FABRICATION - PEINTURE  
ALUMINUM EXTRUSIONS - ANODIZING 2 FABRICATION - PAINTING**

Sapa Canada, inc.  
Adresse Postale 325, rue Avro  
Pointe-Claire, Québec H9R 5W3  
Téléphone: (514) 697-5120  
Télécopieur: (514) 694-8310

# sapa

VENDU À / SOLD TO

EXPÉDIÉ / SHIP TO

INDICATIONS SPÉCIALES  
SPECIAL INSTRUCTIONS

P/S#: 831001  
NOTRE NUMÉRO DE COMM.  
OUR ORDER NO.

2090840 1

**CERTIFIÉ**  
ISO 9001:2008

DART AEROSPACE LTD  
1270 ABERDEEN STREET  
HAWKESBURY, ONT

DART AEROSPACE LTD  
1270 ABERDEEN STREET  
HAWKESBURY, ONT

**WARRANT SAME**

K6A1K7

K6A1K7

PROJ:

Required Date:

CUSTOMER P.S.T.: \*6-0-2-207 N° DE COMM. DU CLIENT CUST. ORDER NO. 17967  
CUST. NO. G.S.T. 12/09/14 12/09/14  
SALESMAN XXXXXX

DATE DE LIVRAISON DATE SHIPPED  
12/10/11  
ENVoyé PAR SHIPPED VIA  
Ottawa 12 OCT.

2 <sup>nd</sup> ITEM NO.	COMMANDE / ORDERED	N° DE MATRICE SAPA DIE NO.	DESCRIPTION DU CLIENT CUSTOMER DESCRIPTION	ALLIAGE ET TREMPAGE ALLOY AND TEMPER	LONGUEUR LENGTH	PRIX UNITAIRE UNIT PRICE
1	465 80 MH 18865 D2244 — STEP EXTRUSION BUNDLE= 1044144 1044145 1044146		F EXTRUDE ONLY DUE=2012/10/12 OC12	6061 T6	2946	

We hereby certify that the material supplied meets the chemical properties as published by the Aluminum Association, and requirements of our Quality procedures

POIDS WEIGHT	PIÈCES PIECES	BALLOTS BDLs	POIDS WEIGHT	PCES / PCS.	MONTANT AMOUNT
		3	608	106 POIDS EN KGS	

*J. Y. P. Desjardins*

325 rue Avro  
Pointe-Claire, QC, Canada, H9R 5W3  
Téléphone (514) 697-5120  
Fac-simile (514) 694-8310

**sapa:**

## Rapport des propriétés mécaniques Mechanical Properties Test Report

Client / Customer : **DART AEROSPACE LTD**  
Adresse / Address : **270 ABERDEEN STREET  
HAWKESBURY ONT,  
K6A 1K7**

# commande Sapa / Sapa order # : **2090840**

# bon de commande / Purchase order # : **17907**

# de matrice / Die # : **MH 18865**

Description : **Step Extrusion**

Alliage & trempage / Alloy & temper : **6061 T6**

Customer Part # : **D2244**

# Contrôle / Control # : **77336-1**

# Coulée / Cast # : **54601**

	Min.requis Min.required	Résultat actuel Actual results
Tension ultime Ultimate stress (psi)	38 000	40 731 ✓
Contrainte élastique Yield stress (psi)	35 000	37 532 ✓
% élongation dans 2" % elongation in 2"	8	8
Dureté Rockwell E (hre) Rockwell E Hardness (hre)	88 @ 100	90

51760/15

Composition chimique typique / Typical chemical composition :

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6063	0,20 - 0,60	0,35 Max	0,10 Max	0,10 Max	0,45 - 0,90	0,10 Max	0,10 Max	0,10 Max
6005	0,60 - 0,90	0,35 Max	0,10 Max	0,10 Max	0,40 - 0,60	0,10 Max	0,10 Max	0,10 Max
6005A	0,68 - 0,72	0,15 - 0,27	0,08 - 0,12	0,20 - 0,24	0,48 - 0,52	0,03 Max	0,05 Max	0,03 Max
6061	0,40 - 0,80	0,70 Max	0,15 - 0,40	0,15 Max	0,80 - 1,20	0,04 - 0,35	0,25 Max	0,15 Max
6351	0,7 - 1,3	0,5 Max	0,10 Max	0,40 - 0,80	0,40 - 0,80	---	0,20 Max	0,20 Max

Nous certifions que le matériel fourni rencontre les exigences chimiques telles qu'annoncées par la norme ASTM B-221-08 excepté pour la section 8.2 (nombre de spécimen) .

We hereby certify that the material supplied meets the chemical properties as published by the ASTM B-221-08 except for section 8.2 (number of specimen) .

Sincèrement vôtre,  
Yours truly,

date : **2012-09-25**



Gilles Pelletier  
Technicien de la qualité  
Quality technician

